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INTERNATIONAL ELECTROTECHNICAL COMMISSION

TECHNICAL COMMITTEE No 80: Maritime navigation and radiocommunication equipment and systems

Unconfirmed minutes of the meeting held in Saint John's, Newfoundland (Canada) from 24th to 26th of September, 2001.

Present:

Chairman (acting)	Mr P F C Griffiths	(United Kingdom)
Secretary	Mr M A Rambaut	(United Kingdom)
Assistant Secretary	Mr N Bradfield	(United Kingdom)
Standards Council of Canada	Mr G Rae Dulmage	(Canada)
IEC Central Office Geneva	Mr C Jacquemart	(Switzerland)
IEC Regional centre for North America	Mr T Rotti	(USA)

COUNTRY	DELEGATES
Canada	Mr N Cater
Canada	Mr N Chaulk
Canada	Mr R Coleman
Canada	Mr G Dinn
Canada	Mr I Ginsburg
Canada	Mr R Grady
Canada	Mr C Hewitt
Canada	**Mr P Leenhouts**
Norway	**Mr S Nordvik (25th-26th only)**
Russia	**Dr R Chernyaev**
Sweden	**Mr H Lindlay**
United Kingdom	**Mr K Fisher**
United Kingdom	Mr R Lee
USA	Mrs M Browning
USA	**Mr J Hersey**
USA	Lt D Mades
USA	Capt J Ryan
LIAISON ORGANISATIONS	
CIRM	Mr A Abbas
RTCM	Mr G Lariviére

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1 Opening of the meeting

Firstly the acting Chairman Mr P Griffiths apologised for the absence of Dr A Norris (Chairman IEC TC80) who had been unavoidably detained.

Mr G Rae Dulmage, Manager of the Standards Division, Standards Council of Canada, welcomed the delegates on behalf of Canada. He wished the committee every success with their work programme and a satisfactory outcome to the meeting.

The Chairman thanked Canada for hosting the meeting.

The Chairman then expressed his condolences and those of the committee to the delegation of the USA for the tragic events of the 11th September.

He then pointed out that due to this tragedy, many delegates had been unable to travel to the meeting.

Apologies had been received from Japan, ISO and IHO as well as other members

He then welcomed Mr Charles Jacquemart from IEC central office in Geneva and Mr Timothy Rotti from the new IEC North America Regional office.

The delegates were then asked to introduce themselves.

The Canadian Coast Guard then invited the delegates to a Dinner on Tuesday evening, and after explaining the administrative arrangements asked for confirmation of attendees.

2 Approval of the agenda.

A revised Agenda had been circulated as WP01. This was approved.

NOTE: The working papers (WP) referred to in these minutes are available under reference 80/317/MTG (IEC document server).

3 To confirm the minutes of the meeting held in Southampton, UK 80/244/RM - October 1999.

No comments were received and so the minutes were confirmed.

4 Matters arising.

There were no matters arising that were not covered by the Agenda. All actions had been completed.

5 Meetings of the TC80 working groups during the plenary meeting.

5.1 Working Group 13 - Displays for the presentation of navigation related information.

The Chairman pointed out the new working group was very important to the future work of TC80 and that a whole day had been set aside for the first meeting. He encouraged all plenary meeting delegates to attend. No other working group had requested meeting time during the plenary.

6 Reports from the working groups

6.1 WG 1 - Radar/ARPA (Convenor UK) IEC 60872 and IEC 60936 series

The convenor Mr Roy Lee apologised for the Chairman of this group who was unable to travel. He then introduced the report of the working group.

The Working Group (WG1) has been meeting at about 3 monthly intervals since 1995. Recent meetings have been held at BSH Hamburg, Norcontrol Norway, LMS Charlottesville USA, but the majority, by agreement, at BSI London, UK. Between 10 and 15 delegates from world-wide are present at the meetings. All business has been by E-mail.

The terms of reference of WG1 cover the revision and updating of the IEC 936 (Radar) and IEC 872 (Radar Plotting) to meet new IMO performance Standards and ITU Recommendations on Unwanted Emissions. Seven Standards were agreed as new work items in two related series, but one IEC 60936-4 Radar with ECDIS 'Back-up' Capability was agreed should not now be completed as the market position (of ECDIS) had changed. The status and predicted availability of an IEC Committee Draft (CD) are given in the following tables.

Table 1 RADAR - IEC 60936 series

IEC Number	Designation	Status at Sept. 2001
IEC 60936-1	Radar with Maps An update of IEC936 (1988)	IS
IEC 60936-2	Radar for HSC	IS
IEC60936-3	Radar with Chart facilities (Selected parts of the SENC)	CDV
IEC 60936-4	Radar with ECDIS Back-up capability	Deleted
'Annex D' to 60936 series	Unwanted emissions (Update)	CDV

Table 2 RADAR PLOTTING – IEC 60872 series

IEC Number	Designation	Status at Sept. 2001
IEC 60872-1	ARPA (Update of 872 (1987))	IS
IEC 60872-2	ATA (For HSC and small ships)	IS
IEC 60872-3	EPA (For use with compass)	IS

Table 3 Current / Future tasks

IEC Number	Designation	Status at Sept.2001
1. ---	'AIS on Radar'	IMO NAV47 (Task completed)
2. PAS ?	Interim Guideline for AIS on Radar (Based on IMO SN Circ.)	1Q02
3. ---	New Technology Radar – to meet spectrum challenge; to meet the changed balance of need for radar in new SOLAS Chapter V 'Presentation of Navigation Information on Ship's Bridges' 'Black Box' approach.	IMO NAV 48 / 49
4. ---	Rationalising the Standards Documentation	---

WG1 has achieved a standards development rate of, to the CD stage, 7 documents in 7 years. Other tasks done in parallel include the development of inputs to IMO and consideration of the matter of the best practical (interim) way forward for AIS information to be displayed on ships bridges to give some feed back on the functionality and safety issues.

It is perhaps interesting to note that the testing of radar unwanted emissions, to ITU Radio Regulations, have been included for the first time. This is predicted to give continuing difficulties into the future to meet yet more stringent spectrum use constraints.

Some issues of continuing debate are:

a) the Spectrum Challenge;
b) to provide safe 'Situation Awareness' [Collision Avoidance] of the combination of AIS and radar targets;
c) ensure clear an unambiguous symbology of integrated objects;
d) to provide safe functional 'situation awareness' [of the joint event of collision and grounding avoidance];
e) the provision of 'Black Box' radars – that will require an interface to the display or display processor;
f) to respond to the change of requirement for the radar that the new SOLAS Chapter V demands.

The Chairman thanked Mr Lee for his report and then gave a presentation on the current work within ITU on Unwanted emissions for radar and how the requirements for future radars will be more stringent.

After some discussion it was decided that now that the Guidelines for the use of AIS on radar had been published by IMO as a SN circular, the WG should draft a new work item proposal to cover he testing of such facilities. The decision as to whether the deliverable should be an IS or a PAS should be discussed at he next meeting of WG1.

Concerning project 60936-3 it was agreed to communicate the RVC and FDIS to Central Office by 2001-11.

Action WG1/Secretary TC80

6.2 WG 1A - Track control (convenor Germany) IEC/ISO 62065

The Secretary reported that this work was almost complete with the draft FDIS having been sent to Central Office for processing. It was not expected that this committee would need to sit again until revision.

It was not clear to the meeting whether this standard also applied to track control systems for High Speed Craft. This is to be clarified by the convenor

Action WG1A convenor

6.3 WG 2 Navigation equipment for small craft - radar (convenor UK) IEC 62252

Unfortunately the convenor (Mr Brian Ring) was unable to travel. His report was presented by Adil Abbas, who is an active member of the working group.

There have been three meetings of the group to date, with the next meeting planned for 24-26th October 2001 in Copenhagen. Progress with IEC 62252 Ed1 is good but the initially predicted CDV completion date of December, after five meetings, now looks unlikely. It is envisioned that there will be at least one meeting in 2002. However, it is group's intention that the CDV will be ready by end of April 2002.

One of the major factors contributing to the delay to the predicted completion date is that of, small-antenna side-lobe measurement. A great deal of theoretical work has been/is being carried out between meting #3 and #4 in order to solve this problem. However, it is possible that some proving work will still be required prior to being able to finalise the values to be specified. Another factor in the delay is that of display screen size, some practical demonstrations are planned for meeting #4 and it hoped that this issue will be solved at this time.

In conclusion, the development of IEC 62252 Ed1 by WG 2 is progressing well but there are some items that do not allow a simple scaling solution from 60936/60872 series and a delay to the initially predicted CDV date of December 2001 is a distinct possibility.

After some discussion it was clear that the CDV would be available by April 2002 (at the earliest).

6.4 WG 4A - Global navigation satellite systems (GNSS) (convenor UK) IEC 61162 series

The Working Group (WG4A) has been meting regularly for the past 2 years. Recent meetings have been held at IALA Paris, Trinity House London, Edinburgh Scotland and USCG NAVCEN Washington. A core of 8 delegates have regularly attended with perhaps 3 or 4 new delegates at various venues for particular items. All business is by E-mail.

The terms of reference of WG4A currently cover the satellite 'position fixing systems' of GPS and GLONASS and their combination and augmentation by differential correction 'beacon receivers' to meet IMO Performance Standards. IMO has recently published new performance standards for GPS, GLONASS and DGNSS and the working group has been working to incorporate these changes into the relevant standards. A second edition of the GPS standard is required and with IMO's new SOLAS Chapter V Carriage requirement, for the first time, for Electronic Position Fixing System (EPFS) on 1 July 2002 there is some urgency. Fortunately (or unfortunately) IMO has put the 'installed after date' of 1 July 2003 for the new Performance Standard MSC.112(73).

The following table gives an overview of the status of the relevant standards.

Table 1 GNSS – IEC 61108 series

IEC Number	Designation	Status at Sept.2001
IEC 61108-1	GPS	IS
IEC 61108-1 (Ed2)	GPS	CD by 4Q01
IEC 61108-2	GLONASS	IS
IEC 61108-2 (Ed2)	GLONASS	?
IEC 61108-3	GPS/GLONASS Combined equipment	Not yet formally started
IEC 61108-4	D-GNSS	CDV

The CD for the D-GNSS has been held up by the deliberations of IMO on the new D-GNSS Performance Standard and by the debate on the effects of USA DOD switching off of S/A. It is planned to complete the task with two more meetings.

The standard provides for tests in a variety of noise environments. It corrects many previous shortcomings. The main difficulty is in how the receiver chooses which reference station to track in the automatic mode. Some receivers currently track the strongest signal rather than the closest station. Under the new standard it will be required to select the station that is closest and which has a good signal quality and station health rather than the reference station with the strongest signal.

The main difficulty in providing a second edition of the GPS standard has been to clarify the IMO words of "shall be capable of operating satisfactorily in typical interfering conditions". This has been achieved with much help from the USA NTIA with appropriate inputs from ITU and RTCA. Improved acquisition time and reacquisition times have been incorporated, as have position output rates been improved from 2 to 1 seconds (0,5 s for the HSC). Clarifications of the interface output of COG, SOG and UTC and of their accuracy requirements are outstanding – though good start has been made.

The group was informed that the German 'Ministry of Transport' had indicated that if no interested party came forward to take over the operation of LORAN-C (Sylt transmitter etc.) that Germany will not extend its current support for NELS (beyond 2004 – announcement 2003). Similar positions had also been taken by other administrations (except France ?). It may be that some land mobile consortium may come forward with the necessary level of funding, but it was considered unlikely. EUROFIX will thus also find survival very difficult.

It was noted that this position would lead to greater GPS/DGPS dependency and thus also a consequential boast to the requirement of anti-spoofing/jamming/interference methodology. It was noted that GPS – L5 is intended to give more interference protection (by longer codes). GPS 3 will also add such benefits. These enhancements will lead to the need for an Edition 3 of the IEC 61108-1 GPS Standard – perhaps in 2003 for consolidation by 2005.

A further thought is that the mariner's requirement (in ECDIS, INS etc.) for a second "independent positioning aid" will now fall to be met by DR (log and compass – continuously calibrated by GPS) and by Radar (also continuously calibrated by GPS through AIS reference targets).

'Integrated Position' systems (that accept many different basic position systems and augmentation services), as well as further repercussions that stem from S/A being switched OFF and Galileo are work for the future, but the important future task is perhaps GPS Ed –3 as noted above.

Concerning IEC 61108-1 Ed. 2 it was agreed to communicate the CDV to Central Office by 2001-12.

6.5 WG 5 General Requirements (Chairman UK) IEC 60945 ed4

Subsequent to the publication of IEC 60945 (Maritime navigation and radiocommunication equipment and systems – General requirements – methods of measurements and required test results) third edition in 1996, a New Work Item Proposal (80/155/NP) was raised in 1997 by the Secretary and TC80 Denmark to commence a revision.

It was felt that a revision was needed due firstly to the IMO work on ergonomic criteria for ships bridges and secondly due to problems in test houses with some of the low frequency EMC testing.

Work began in March 1998 and meetings were held four times in the UK, once in the USA and once in Germany and the work was well advanced by the time of the last TC80 Plenary meeting in September 1999 during which a further meeting was held. A subsequent meeting was held in the UK in January 2000 after which a CDV was prepared and submitted to the Secretary in June. A French translation was prepared and the CDV was circulated as 80/286/CDV in February 2001 with a closing date for voting of July. The result of the vote was positive with some comments to resolve. The Secretary is currently preparing the FDIS for circulation for voting this year.

The proposed fourth edition of IEC 60945 extends the detail of operational tests particularly for equipment which is operated through software menus. This has been derived from an exhaustive investigation of appropriate references and supports IMO actions arising from studies of the human element. The layout of Clause 4 (Minimum performance requirements) has been changed to give a better grouping of Ergonomics, Hardware and Software requirements. The EMC tests have been revised with the frequency range extended from 1GHz to 2GHz noting the increasing reliance of ships on satellite navigation and

communications. Clarifications to the text of the third edition have been added where experience has shown a need and the references updated.

Mr Kim Fisher, Chairman WG5 was then asked if another revision was to be started. He felt that it was not necessary at the moment. Mr Jo Hersey (US) asked if a future edition might include a section on the antennas used in GMDSS and Adil Abbas and Mr Peter Griffiths pointed out that new RF technology such as Bluetooth and Ultra Wide Band might affect the EMC sections.

6.6 WG6 - Digital interfaces (convenor UK) IEC 61162 series

As neither the Secretary or the Chairman of WG 5 was able to travel to the meeting, the report which had been prepared by the convenor Mr Mike Fox was presented by Mr Kim Fisher.

6.6.1 Introduction :

Working Group 6 deals with Digital Interfaces for Navigation and Radiocommunications systems and equipment.

Since the last Plenary in 1999, meetings have been held in December 1999 and March 2000, (both at BSI), November 2000 (Florida), February 2001 (BSI) and June 2001 (Oslo). Again we have been fortunate to have been able to use facilities provided by National Standards organisations and in the case of the Florida meeting, by courtesy of the NMEA. We have a core of strong supporters and have maintained very close liaison with the NMEA Standards Committee.

The UK has continued to fund the Convenor through the MCA and have agreed to fund the work until April 2002.

6.6.2 IEC Standard 61162-1 :

Edition 2 of this original standard was published during 2000. The recent work has been concentrated on the drafting of two upgrade documents, the first covering the AIS requirements and the second modifications to the base document to take account of new requirements and experience. One aspect that has been discussed is the need for all relevant equipment standards to incorporate the interface requirements for the equipment to be accurately specified in the standard. Up to now a very general statement has been included but WG6 considers this is now inadequate and more details are needed. The input paper WP08 outlines the situation and Plenary were asked to endorse this request. **(See annex A)**

After discussion the document was accepted as a good procedure and the Secretary IEC TC80 will circulate it to all WG's for use with all new Standards that have yet to reach CDV stage.

Action TC80 Secretary

As noted in the last report to Plenary (document 27/99), in order to reduce the approval cycle time, the two documents noted above will be submitted for processing as PAS documents. Eventually they will be incorporated in a future edition of the main Standard. These documents rely heavily on the work of the AIS group and the NMEA. Close alignment is being maintained.

6.6.3 IEC Standard 61162-2 :

No work has been attempted on the revision of this Standard due to the level of work needed on the other work items.

6.6.4 IEC Standard 61162-3 :

This work is delayed but a useful demonstration of the NMEA 2000 was given at the meeting in Florida, together with a general presentation on the final draft system. The NMEA work is complete and the final issue should be available by the time of the Plenary.

Work has yet to commence at WG6 but the meeting in Oslo made a first in-depth review of this versatile standard. Noted that the AIS will benefit from the increased data handling capacity of this standard for certain messages. In addition the question of redundancy capability in a SOLAS system has to be given serious consideration before the standard can be finalised for an IEC Standard in the navigation and radiocommunications field.

The commercial aspects of adopting this system for international SOLAS use have to be reviewed, the question of fees for certain elements may cause some concern, but we have had similar problems before e.g. SART.

The Secretary referring to IEC 61162-3, wanted to know how the payment of funds for a manufacturers code would work in practice in an IEC document. He was concerned that IEC would not endorse such a procedure for using an International Standard and requested WG6 to talk to the NMEA to find a solution. This would need to be resolved before the CDV could be submitted for voting.

Action WG6

Now that the NMEA have finally released NMEA 2000, it was expected that a CDV would be ready in March 2002.

6.6.5 IEC Standard 61162-4 series ;

The four base standards –400, -401, -410 and –420 proceeded through the CDV stage and eventually were submitted to Geneva in March as FDIS. Some minor editorial issues have recently been cleared and the final issue is awaited. The Plenary should note the heavy workload involved in drafting such a complex document and the WG has to thank the TC80 Secretary for his contribution to the editing prior to submission to Geneva.

Currently the first draft of the CDV for the Test Standard –402 is being reviewed and should be available in revised form for circulation as a CD for Comment by the time of the Plenary, subject to the depth of modifications needed.

6.6.6 Communications :

Since the last Plenary we have improved e-mail communications and currently all documents are circulated electronically. This has resulted in fewer meetings being required, but two per year is found to be the optimum. Membership has changed little, apart from internal company personnel changes, the level of attendance has varied, depending upon venue, but we did have a good representative attendance at the Florida meeting.

6.7 WG 7 and MT1 - Electronic chart display and information systems ECDIS (convenor US) 61174 ed2 and ed3.

Lt Dan Mades (US) gave a power-point presentation of the status of this work which is summarised below.

Edition 2 of this standard which was prepared by MT1 (maintenance team 1) to include the raster chart display system (RCDS) and backup procedures as stipulated by the IMO, is now at FDIS stage. During this work which had been constrained to only add the extra facilities and correct known anomalies, many areas were found that need further revision. The work of MT1 is considered closed.

It was decided that this work had become too extensive for the original maintenance team and so WG 7 was reformed to draft a fully revised standard with a 4-5 year timescale for the work.

A number of tasks were identified which are shown below:

Task 1 - Review of RCDS Mode of Operation

Task 2 - Review of Back-up Arrangements

Task 3 - Review of Navigational Symbols

Task 4 - Display-related Color Issues

Task 5 - Review of ENC and RNC Test Data Set

Task 6 - ENC Security

Task 7- Editorial Review of Standard Including Subdivision of Requirements

Task 8 - SENC Distribution

Task 9 - Comprehensive Review of Test Sections

Task 10 - Marine Information Objects

Each of the tasks has a detailed program and task leader, which can be obtained from the Convenor Mr Joe Ryan if needed.

The second meeting of WG7 is planned for Spring 2002.

The CDV of edition 3 is planned for 2004 with publication in 2005.

The Secretary noted that in changing to a WG the IEC website needed to be updated as it still showed the structure of the original WG7 that prepared edition 1.

Credentials for the members should be checked for this new working group.

Action TC80 Secretary and WG 7 Convenor

6.8 Global maritime distress and safety system (GMDSS) IEC 61097 series

The Chairman and convenor of this Working Group can no longer take part in this work however as most of the work is now in Standards maintenance, each team has its own project leader with the secretary of TC80 co-ordinating the tasks.

6.8.1 Inmarsat F (project leader UK) IEC 61097-13

The TC80 secretary presented the report on behalf of Mr John Hough who was unable to travel.

6.8.1.1 Inmarsat-F_1: Description

Inmarsat-F_1 is a new, maritime satellite communications equipment currently being designed by Inmarsat to take over from Inmarsat-A and Inmarsat-B eventually. The development of this new equipment is still commercially confidential and members of the Plenary committee are asked not to disclose any information regarding it outside IEC.

The new equipment provides Mini-M voice, fax, high-speed data and internet access via an antenna which is comparable in size to Inmarsat-A and Inmarsat-B. It also provides call prioritisation/pre-emption from both the shore and from the ship.

6.8.1.2 Meetings

Three meetings have been held to date; 2 March 2001, 15 June 2001 and 30 August 2001, all at Inmarsat's headquarters in London. This approach means that Inmarsat experts are available at short notice to explain various aspects of Inmarsat-F_1 design philosophy.

Discussions have mainly centred around:

a) voice quality,

b) lack of direct printing,

c) test equipment,

d) test philosophy, and

e) spurious outputs.

After a live demonstration of Mini-M, it was agreed that voice quality is adequate for distress communications.

It was also agreed Inmarsat-F_1 will be a useful addition to the GMDSS despite the absence of direct printing.

Inmarsat stated that a "Physical Layer Test-set" would be available to manufacturers to simulate the Inmarsat-F_1 infra-structure and this could probably be loaned to Test Houses.

It was agreed to recommend that Inmarsat type approval testing should be accepted by test houses to minimise the amount of re-testing needed.

It was agreed that test houses should conduct spurious output tests as they have a duty to protect other users of the radio spectrum and also have the necessary test equipment to comply with the latest standards. Inmarsat agreed to look into the possibility of waiving a wide-band spurious output test as part of the Inmarsat type approval process, provided this test is performed by test houses.

6.8.1.3 Future Work

It is hoped to have a Committee Draft of this document available for release by the end of 2001.

Mr Joe Hersey (US) asked if this equipment really needed to be part of the 61097 series as it didn't meet the IMO requirement of Direct Printing in the GMDSS. The secretary replied that this equipment needed to be installed with an Inmarsat-C terminal to comply with the GMDSS requirements, however Joe Hersey indicated that Inmarsat-C terminal met the requirement in its own right and did not need any supplementary equipment and suggested that the Standard should be published with a different number outside the 61097 series indicating that it was not a mandatory part of GMDSS.

Action Mr Joe Hersey (US)/ Inmarsat (via CIRM if necessary)

6.8.2 406 MHz EPIRB maintenance (Cospas-Sarsat)

A small project team was set-up under the guidance of COSPAS-SARSAT, the system operators, to review the standard due to changes in the requirements.

The IEC 61097-2 standard for 406 MHz EPIRBs was brought up-to-date to include:

a) The Cospas-Sarsat requirements in respect of additional frequency channel at 406.028 MHz and location protocols (with encoded position data);

b) New IMO requirements in relation to 406 MHz EPIRBs;

c) New ITU Recommendation ITU-R M.633-2.

Efforts have been made to make the IEC standard consistent in substance with the latest revision of the USA RTCM 406 MHz EPIRB Standard.

The proposed amendments were discussed at 2001 Annual RTCM Assembly Meeting in St. Petersburg, USA, and at the Cospas-Sarsat Joint Committee Meeting JC-15 in Hong-Kong, China. Both meetings supported the proposed amendments.

Members who took part in the working group included:

Capt Bill Adams of RTCM,	USA / RTCM
Mr Peter Forey of Sartech,	UK /.CIRM
Mr Chris Hoffman of McMurdo,	UK / CIRM
Mr Fred Kissel of Computer Science Corporation,	USA,
Mr Sergey Mikhailov (project leader)	Cospas-Sarsat Secretariat and
Mr Michael Rambaut,	IEC TC 80 Secretary and CIRM.

The CDV of edition 2 is now being circulated for voting.

6.8.3 Digital selective calling (DSC) (project leader US) IEC 61097-3

Mr Joe Hersey explained that this project was on hold until he ITU had completed its work on the revision of the two recommendations RM.493 and RM.541 which define DSC.

If this work is finished at the next session in October 2001 then the work could be started.

It was agreed to communicate the CDV to Central Office by 2002-07.

6.9 WG 8A- Automatic Identity Systems (convenor UK) IEC 61993 series and IEC 62287

Roy Lee convenor and chairman presented his report.

6.9.1 IEC 61993-2 Universal AIS Class A for IMO ships

The Working Group (WG8A) has been meeting on U.AIS business at about 3 monthly intervals for three day meetings. Tampa USA, Cuxhaven Germany, Ottawa Canada, San Diego USA and BSI London have all been meeting venues. The meetings have been greatly assisted by breaking the work into task domains with competent and dedicated team leaders from the start. All business is electronic.

The terms of reference of WG8A are to clarify the IMO Performance Standard for AIS, but more dauntingly to clarify the ITU Recommendations in M.1371-1. Fortunately the secretary of the ITU recommendation has been an active member of IEC WG8A.

The group has worked well on a fast track and completed its CDV (it had a CD on the way) in Jan 2001. The CDV ‘International Comments’ were resolved in Aug 2001, thus the standard should be available by early 2002 – ahead of the IMO mandatory carriage on 1 July 2002. The number of comments indicates either that there is a lack of maturity in the standard or alternatively that the ideas for enhancement and augmentations are too many and that the current version should be firmly frozen and further thoughts captured for a second edition.

There are still those who opine that there are significant difficulties in making the U.AIS concept fully work in practice, in particular its self-consistency. A number of inter-operability trials are being conducted around the world to reduce this uncertainty and risk. An excellent ‘gold standard ‘ test box has been developed in Germany.

The “Operational guidelines for the onboard use of the AIS” were completed by IMO at NAV 47 in July 2001. An ‘Interim guideline for the display of AIS information’ was also completed at NAV 47 and an IMO SN Circ. published.

Table 1 AIS Transponders – IEC 61993 series

IEC Number	Designation	Status at Sept. 2001
IEC 61993-1	AIS	IS
IEC 61993-2	U.AIS	CDV stage complete

Which GPS and DGPS standards should be referenced and which parts of them should be required has been a issue.

Aspirations for a ‘new work item’ to state the requirements for an AIS graphic display were agreed on but not enough delegates were put forward to staff the task. Thus the stand-alone working group was deleted. This in hindsight was perhaps beneficial in not diluting the scarce resource of necessary experts. This will now become an identified task (with a team leader) within WG13. A useful initial meeting of interested parties had already been held contemporaneously with a radar meeting.

6.9.2 IEC 62287

A ‘New Work Item’ for the ‘Class B’ AIS (SOLAS Exempt) has been agreed.

It was agreed to communicate the CD (or CDV) to Central Office by 2003-06.

6.10 WG 10 Integrated navigation systems (convenor UK) IEC 61924

The secretary of WG 10 was unable to travel to the meeting and so the report was presented by Mr Roy Lee who is the acting meeting Chairman.

Working Group 10 has been developing the standard for Integrated Navigation Systems (INS) – meeting at about 3 monthly intervals and for 3 days. Meetings have been held in Tokyo Japan, Connecticut USA, Bremen Germany and London UK. Between 10 and 15 delegates from worldwide attend the meetings. All business is electronic. Attempts to break the work into effective task domains have largely failed through lack of commitment (scarce time resource of the few experts).

The scope of INS was agreed within IEC and then a paper input to IMO. This resulted in an MSC resolution adopted in Dec 1998. During the currency of the task the AIS has been adopted and it has significantly affected the work breakdown, particularly in the area of ‘integrated information displays’ (data fusion etc). The standard being developed is **IEC 61924**. A lot of very good work has gone into the current document.

Areas of continuing concern and debate include, amongst others:

a) situation awareness;

b) mode awareness; the two most important concerns, and

c) information fusion, not confusion; ‘Integrated Information Displays’ concept;

d) harmonised symbology and functionality of the inter-operable systems on the GIS;

e) integrity monitoring;

f) the provision of a ‘consistent common reference system’ (the INS A).

There is a continuing debate on the dividing line between INS and the augmentation aspirations of stand-alone equipment standards – i.e. Radar and Charts – to go beyond the general intent of the parent concept i.e. radar or a chart, to the risk of safety and against IMO requirements.

To attempt to bring some issue to conclusion, a CD was distributed during year 2000. It is now planned that the next meeting will firm up the requirements section sufficiently for the test section (maybe using the Track Control concept of scenario exerciser available from H-Scientific, UK) to be completed at the following meeting (Dec in London) so that only a final consistency check in early 2002 will complete the task.

It was agreed to communicate the CDV to Central Office by 2002-06.

6.11 WG 12 VHF with DSC for small-craft (convenor UK) IEC 62238

At the previous Plenary meeting of TC80 in September 1999 a decision was made to consider the development of a standard for a VHF radiotelephone with DSC for non-Convention (small) craft, which would allow compatibility with the Global Maritime Distress and Safety System (GMDSS). It was noted that Europe had adopted a standard EN 301 025 and, in the USA,

RTCM had also developed a standard and therefore the two regional standards would provide a firm basis for the development of a global standard.

The Secretary raised a New Work Item Proposal (80/265/NP), which was approved in November 2000. It was decided to form a new Working Group for the work and not to include the standard in the IEC 61097 series as the equipment was not intended to meet IMO requirements for Convention ships. Work commenced with a meeting in the UK in January 2001 held to coincide with the London Boat Show. A standard was drafted, to be known as IEC 62238 (VHF radiotelephone equipment incorporating Class “D” Digital Selective Calling (DSC)) and work continued by e-mail.

The proposed new standard removes some of the proscriptive requirements of EN 301 025, particularly the need for a channel 70 watch-keeping receiver and a keyboard, and simplifies the call type requirements of SC 101. It limits high power transmit operation to a maximum of 5 minutes to allow the use of low cost transmitters. It adds an innovative feature in requiring the distress call to be followed by an expansion call giving enhanced position. This will provide a position accurate to 10m rather than the 1 mile provided by standard GMDSS equipment.

Working Group 12 has currently progressed the work to the stage of a CDV, which has been submitted to the Secretary.

It was agreed to communicate the CDV to Central Office by 2001-10.

7 Consideration of new work items and review of the work programme.

A full review of the work programme as on the IEC database was then carried out. Document 80/314/PW had been circulated to the members before the meeting.

7.1 Items in the work programme not already discussed in the previous section.

7.1.1 PWI 80-1 Merging of radar standards

Considering that the issue of displays is to move to Working Group 13 (80/300/NP) and considering that the Performance Standard and requirement for radar is to be reviewed by IMO and that pressure from the ITU for less unwanted emissions will affect new Radar designs, this project is to be cancelled. However the subject will be covered by PWI 80-4 New Technology Radar in the future

7.1.2 PWI 80-2 Radar UAIS compatibility.

Now that IMO has published interim guidelines on the use of AIS on radar, This Item will be used to draft guidelines and ultimately a IS for the use of AIS on Radar see Action above in 6.1.

7.1.3 PWI 80-3 Symbology - radar/radar plotting/UAIS/ECDIS

This item can now be cancelled as PNW 80/300/NP is approved and will deal with this item.

7.1.4 PWI 80-4 New Technology Radar

This item is supported to remain at this stage.

7.1.5 PWI 80-5 Bridge Watch Alarms

IMO has now finished its work and has completed the performance standard for bridge watch alarms. Secretary is to raise a New Work Item proposal

Action Secretary TC80 raise NP

7.1.6 PWI 80-6 Track Control - HSC- motion control

There has been no requirement so far for a new standard here but the project should remain (see 6.2 above)

7.1.7 PWI 80-7 VTS/UAIS

The need for an International standard for the VTS part of AIS was discussed. It was not sure that the VTS specifier would need such a test standard. Mr Roy Lee said that he would take the question to WG8A for comment

Action Convenor WG8A

7.1.8 PWI 80-8 Radar Target Enhancer

IMO have recently started work on the radar reflector issue and this project should stay until IMO have made clear the requirement.

7.2 Other New work items submitted to the plenary.

7.2.1 PWI 80-nn Antennas for GMDSS

Joe Hersey as was discussed above in 6.5 asked that a preliminary work item be added for the testing of antennas suitable for the GMDSS.

7.2.2 PWI 80-mm Shipborne Voyage data recorder for existing cargo ships

IMO are discussing what reduced specification, if at all, should be used for the retrofitting of VDR to exiting cargo ships. As soon as there is a new performance standard the PWI can go forward.

7.3 Recently Adopted New work items not discussed above

7.3.1 80/300/NP WG 13 Displays for the presentation of navigation related information - General requirements, methods of test and required test results.

This very important project has started with a preliminary meeting in the US. The first official meeting was held during this plenary meeting. The minutes and supporting documents are to be circulated as an INF document to encourage participation from more P members and the liaison organizations.

Action TC80 secretary/convenor WG13

8 Review of IEC TC80 standards - maintenance and withdrawal.

The full list of published standards, standards under review and being prepared was presented in WP 18.

The following Decisions were taken:

8.1 IEC 61097-1 SART

This was to be reviewed as soon as IMO had made a decision on the future use of radar but not before.

8.2 IEC 61097-6 NAVTEX

This was to be reviewed as soon as IMO had completed work on allowing multi-line displays and no printing and would include the extra frequencies now in use.

8.3 IEC 61097-9 Transmitters and Receivers for use in the MF and HF bands

This standard should be checked to see if the requirements for two tone alarms and A3H modulation are still valid in the standard as these are no longer required or allowed by the ITU. If the standard still calls for this it will need amending.

8.4 IEC 61110 System Omega and differential Omega

This Standard is to be withdrawn as the system is closed.

8.5 IEC 61135 Decca Navigator

This Standard is to be withdrawn as the system is closed.

All other TC 80 standards are to be reviewed at their normal review date but currently those that are not mentioned above are fully serving their purpose and need no urgent revision.

Action TC80 Secretariat to raise appropriate MCR's

9 Liaison between TC 80 and other IEC committees.

9.1 TC18

Mr Kim Fisher (WG5) reported that currently there is no work in TC18 that affects the TC80 programme, however IEC 60533 Electrical Installations on Ships will be reviewed shortly and TC 80 should observe this work.

9.2 TC102

This work on receiver measurements has been withdrawn.

10 Liaison with IEC TC80 and ISO

The secretary TC80 presented a summary report (WP19) copied below.

10.1 ISO TC8

10.1.1 TC8 SC5 Ships Bridge Layout and associated equipment

Number	Title	Stage	Stage date
ISO/CD 14612	Additional Requirements and guidelines for centralised and integrated bridge functions	30.99	2000-09-12

10.1.2 TC8 SC6 Navigation

Number	Title	Stage	Stage date
ISO 11674: 2000 Corr 1	Heading control systems	60.00	2001-09-17
ISO.DIS 16273	Night vision equipment for HSC	40.60	2001-06-25
ISO 16328	Gyrocompasses for HSC	60.60	published
ISO DIS 16329	Heading control for HSC	40.20	2001-03-29
ISO WD 19379	ECS database	20.20	2000-11-24
ISO DIS 22090-1	THD's - Gyro-compass method	40-20	2001-04-05
ISO AWI 22090-2	THD's - Magnetic method	20.00	2000-10-06
ISO AWI 22090-3	THD's - Radio wave method (GPS)	20.00	2000-10-06
IEC/DIS 62065	Track control	40.60	2001-01-31

10.1.3 TC8 SC9 General requirements

Number	Title	Stage	Stage date
ISO DIS 19018	Terms abbreviations and graphical symbols on navigation	40.20	2001-08-09

The Chairman pointed out that this document was not readily acceptable to professional mariners and could conflict with the work being done in TC80 WG 13. Further discussion took place and it was not clear what the definitions and symbols referred to in the draft document were to be used for. A careful watch of this documents progress is recommended to those drafting the new display standard in WG13.

Action All P members to contact their national ISO member and explain.

10.1.4 TC8 SC10 Computer applications

Number	Title	Stage	Stage date
ISO PRF 15849	Guidelines for the implementation of a fleet management system network	50.20	2001-08-29
ISO AWI 16917	Data transfer standard for maritime and inter-modal transport	20.00	1999-05-26
ISO CD 17894	General principles for the development and use of programmable electronic systems in marine applications	30.00	2001-03-20

Note: Stage 20.00 = new project registered
Stage 20.20 = working draft initiated
Stage 30.00 = CD registered
Stage 30.99 = CD approved for registration as aDIS
Stage 40.20 = DIS vote initiated
Stage 40.60 = voting summary dispatched
Stage 50.20 = FDIS vote initiated
Stage 60.00 = preparation for publication
Stage 60.60 = published

10.2 ISO TC 211

TC211 is developing a range of standards on Geographic information and Geomatics. This work is being monitored by IHO and may cause pressure on the data format and transfer standards (S52 and S57) used for ECDIS. The ISO series is 19101-19130, a considerable family of standards.

11 Liaison between IEC TC80 and other organizations.

11.1 IMO (International Maritime Organization)

Good relations exist with the IMO. A close working relationship has built up over the new work planned in WG13 - the first ask of W13 is an input paper to IMO.

11.2 ITU-R (International Telecommunications Union)

Extensive work on the AIS system requirements in Working Party 8B of the ITU-R has involved many members of WG8A. The revision of IEC 61097-3 is awaiting changes at ITU and the WG8 members are involved

11.3 IHO. (International Hydrographic Organization)

IHO specify the detailed requirements of ECDIS and many members of WG7/MT1 are also members of the appropriate IHO committees. The Secretary of TC80 recently attended the IHO CHRIS meeting in Athens as an Observer.

11.4 ICS (International Chamber of Shipping)

The Secretary of TC80 is in regular contact with ICS.

11.5 IALA

Many TC 80 members of WG8A are regular attendees at the IALA meetings on AIS.

11.6 IMSO

IMSO is the new regulatory body for Maritime Satellite operators and takes the place of INMARSAT who are now a commercial company. The Secretary of TC 80 is in regular contact with the Technical Officer.

11.7 CIRM

Many CIRM members are active participants in the work of TC80. The Secretariat of TC80 is funded by CIRM.

11.8 RTCM

Close co-operation exists between RTCM and IEC TC80. RTCM has been instrumental in encouraging US companies to use IEC Standards for their products. They also host IEC TC80 meetings at their annual Assembly.

11.9 NMEA

NMEA are the originator of many of the Interface Standards adopted by IEC TC80 in the IEC61162 series. There is good co-operation at all levels.

11.10 COSPAS-SARSAT

Cospas-Sarsat operate the emergency beacon system used on most ships. The technical department has been closely involved with the development and review of IEC61097-2.

11.11 ETSI

The relationship with ETSI has changed in that the GMDSS series of standards is now complete. Therefore the current work programme is specifically looking at European issues to do with the R&TTE directive which is not directly related to the work of TC80. The Secretary TC80 is monitoring the situation.

11.12 CENELEC / CEN

The Secretary TC80 is in regular contact with these European bodies. Most of TC80 standards are parallel voted by these organisations in order that they can become EN's.

12 Progress in International harmonization.

There were no specific statements, however the meeting felt that more and more acceptance of the IEC TC80 Standards for IMO regulated ships. The initiative between the US and the EU on mutual acceptance of type approvals was helping here. There was no comment on the further use of TC80 standards in Japan as unfortunately no Japanese member was available at the meeting.

13 Any other business

13.1 Presentation by the representative from Central Office

Mr Charles Jacquemart gave a presentation on the latest changes and developments in the International Electrotechnical Commission (IEC) **Membership**

Currently there are 65 member countries out of which 52 are full members, 9 are associate members, and 4 are affiliate members. The latest members to join the IEC are: Argentina and

Brazil (reinstated). List of associate members: Bosnia and Herzegovina, Colombia, Cyprus, Estonia, Iceland, Latvia, Lithuania, Malta, Tunisia. List of affiliates: Costa Rica, Cuba, Eritrea, Uruguay.

There are now about 200 technical committees and subcommittees in the IEC. **Technical Committees**

Latest TC's set up are:

- TC 106: Methods for the assessment of electronic, magnetic and electromagnetic fields associated with human exposure
- TC 107: Process management for avionics
- TC 108: Safety requirements for electronic equipment within the field of audio/video, information technology and communication technology (Title under discussion)
- TC 109: Insulation co-ordination for low-voltage equipment **IEC Directives**

New editions of the directives have recently been published as follows:

ISO/IEC Directives, Part 1: Procedures for the technical work (fourth edition, 2001)

ISO/IEC Directives, Part 2: Rules for the structure and drafting of international standards (fourth edition, 2001)

ISO/IEC Directives, Supplement: Procedures specific to IEC (first edition, 2001)

Announcement: AC 88 (2001-07-20). Directives may be downloaded from the IEC web site (www.iec.ch). No paper version will be distributed.

13.1.4 Promotion of horizontal TCs and publications in the IEC

For the sake of promoting the implementation of basic IEC standards a web page on the IEC web site has been developed providing a list of technical committees with horizontal functions; it also includes links to horizontal publications.

This was announced by AC 104 (2001-08); there is an announcement and a link at the home page of the IEC web site.

13.1.5 Online IEV database (International Electrotechnical Vocabulary)

The IEV can be accessed electronically as follows: http://domino.iec.ch/iev This gives a list of all terms in the IEV, with their translations into other languages.

Announcement was made by AC 55 (2001-06).

13.1.6 Availability of green meeting documents

For the sake of transparency in the future green meeting documents will be made available on the IEC document server: the complete collection of documents distributed at a meeting will be collected in a single ZIP archive and given a reference of the type MTG. TC/SC secretaries are therefore invited to send a complete set of all meeting documents, wherever possible, to Central Office, after each TC/SC meeting.

Announcement: AC 11 (2001-02-02).

13.1.7 TISS: Technical information support and services

Promotes the use of modern IT tools in the IEC standards development process. Supports the use of the IEC standards template. Supports the setting up ftp sites for technical committees or subcommittees and aids Electronic voting, etc.

Further details are given on the IEC web site (www.iec.ch/tiss).

13.1.8 Modern IT tools

Charles then described the use of modern IT tools (information technology) in the IEC. IEC are currently spending important resources in this area.

A **guide on the use of IT tools** in the IEC is available on the web site (no password required, free of charge). It provides general guidance and recommendations for the use of IT tools in normal IEC work. It deals with communication and exchange of electronic documents and accessing electronic IEC files.

Seminars were and will be organized in many countries to train all those participating in the standards development process.

The next item is **electronic voting** on all IEC voting documents (NP, CDV, FDIS, etc.): There are of course security checks to make sure that only authorized users can vote. IEC encourage all national committees to make use of this new service.

IEC have introduced a service that **notifies all subscribed users** of IEC documents circulated during the last week. The same service exists for specific committees ("**My IEC**").

Meeting folders: electronic draft agendas, giving direct access to the working documents listed.

The next item of interest is the **IEC ftp server site** (ftp: file transfer protocol). The Central Office has installed an ftp server for the use of technical committees, subcommittees and working groups. Such an ftp server can be used for the exchange of documents and comments by a closed group of users. The Central Office invites its committees to make use of this new service. (This provides simply a means for faster distribution of information and a forum for informal exchange of views.)

Each ftp server will be managed by a so called ftp manager, who shall be appointed by the officers of the TC/SC concerned. His role is to manage the files on the server and to provide details of the members who will be authorized to access the server. (More details in administrative circular 36/AC, 1997-03-14.)

Mail exploder: (See administrative circular 53/AC, 1999-04-30): it works by storing a list of e-mail addresses at the Central Office. An e-mail sent to the list is automatically distributed to all addresses on the list. This tool allows a closed group of users to exchange documents and comments.

The next and last item of interest is the availability of a **template for preparing IEC standards**. It is intended to facilitate the preparation of standards in a WORD for Windows environment (version 6.0 or 7.0). The IECSTD can be downloaded from the IEC web site download area. It is also available on diskette and can be requested from the Central Office.

13.1.9 New IEC office in the USA and in the Far East

The objectives of these offices are to promote IEC standards in these areas.

IEC regional centre for North America: see AC 107 (2001-08-31). The office will be in charge of a number of TCs and SCs; IEC TC 4 and TC 37 have already been allocated to Mr. Tim Rotti. The office is located 40 km West of Boston.

There will also be an office in Singapore, see AC 108 (2001-09).

13.2 Formal thanks to the Canadian Coastguard and CCMC.

The Chairman thanked Mr Pieter Leenhouts for organising the meeting and especially Mr Neil Cater and his team at CCMC, St John's who arranged all the local facilities.

14 Date and Location of the next meeting.

The Chairman reminded the delegates of the mostly European locations of the previous meetings. In the absence of Japan, The US were encouraged to see if they could find a venue for 2003. Mr George Lariviére of RTCM suggested that if the US wished, it might be possible to arrange the meeting during the RTCM assembly 2003, but it would be in May not as traditionally an Autumn date. The Chairman stated that this was not a problem.

Action US (Mr J. Hersey) / Secretary TC80

Action All Members

15 Close of the Meeting

The Chairman thanked all the delegates for their assistance during the Plenary and declared the meeting closed.

The Secretary thanked Mr Peter Griffiths for standing in as Chairman for Dr Andy Norris at such short notice.

The delegates showed their appreciation of the Chairman's fair and understanding manner in which he had conducted the meeting by a prolonged round of applause.

Annex A
Interface Standards for IEC TC80 Equipment

A Review of the process

A.1 Introduction :

When the Interface Standard 61162-1 was originally developed the equipment standards generally included a simple statement requiring an interface to be provided, if applicable, to conform to IEC 61162. Since these early days WG6 has developed a series of standards namely 61162 –1Ed 2; 61162-2; 61162-4 series (currently at FDIS) and 61162-3 is proposed. Each of these standards has different application, depending upon the equipment or system.

WG6, when preparing the second edition of 61162-1, included a tabulation of the “Minimum required sentences” for equipment with digital interfaces conforming to IMO resolutions and ITU recommendations. This tabulation was produced about 3 years ago, taking account of other equipment Working Group recommendations and may not be current, depending on the stage of development of individual equipment.

The development of the AIS Equipment Standard (61993 Part 2) has confirmed the need for individual equipment standards to list the essential interface data, which will necessitate a full listing of the minimum sentences associated with the AIS equipment.

WG6 requests the Plenary to endorse this input document and request all relevant Working Groups to note and action as appropriate. Should a Working Group be unsure of which sentences are preferred then WG6 is available to provide guidance.

The following text is drafted to cover the general principles that should be applied to the equipment standards. Part 1 is for inclusion in the first part of a typical standard, which states the base performance; Part 2 would be included in the relevant Test Section.

A.2 Part 1 - Interfacing :

a) All relevant interfaces to external sensors and sources, which comply with IMO Resolutions and ITU Recommendations, shall comply with IEC 61162.

b) Relevant equipment standards shall specify and list the minimum sentences that the equipment shall receive as a Listener and transmit (generate) as a Talker.

Note: - that IEC Standard 61162-1 lists some of the appropriate sentences in the informative Annex A, Table A.1 and Table A.3. These tables are informative only, are not current for all devices, and may not exist in the next edition of 61162-1. Additional guidance on the determination of appropriate sentences may be sought from IEC TC80 WG6.

c) The list of minimum sentences shall include the Approved Sentence Formatter and the single line title or description. There is no requirement to provide more detail, e.g. the sentence structure; this is available, together with all the essential definitions, in IEC 61162-1.

Note: - that IEC Standard 61162-1 Table 5 contains the full list of all possible Sentence Formatters and their single line descriptions.

d) Any additional interface capability e.g. proprietary input or output sentences shall be tabulated as above, with full documentation.

e) Any critical or unique interface characteristics, e.g. timing, resulting actions or equipment behaviours due to receiving or transmitting a sentence, which are additional to those specified in the IEC interface standard, should be tabulated.

A.3 Part 2 - Interface tests :

a) All interfaces that conform to IEC 61162 shall be tested in accordance with the relevant annex of IEC 61162, e.g. Annex C of IEC 61162-1.

b) Any additional interfaces based on IEC 61162 standards shall be tested to the appropriate IEC 61162 standard.

c) All other interfaces shall be tested in accordance with the documentation provided, but shall conform to the general principles of IEC 61162.

d) Any critical or unique interface characteristics, e.g. timing, resulting actions or equipment behaviours due to receipt or transmission of a sentence, shall be identified and include a detailed test method for each critical interface characteristic.

Note: It is recommended that additional informative annexes illustrating unique interface characteristic behaviour be included with the IEC Test Standard. One example would be that any unique relationship between sentences and how the device behaves with regard to that relationship are provided. In IEC 61993-2, for example, a relationship is established between the ALR and TXT sentences. Specific information is provided as to when an ALR sentence should be generated and how the TXT sentence is used to link additional information with a specific Alarm sentence. Another example might be when associating the relationship of internal processes, data, or actions, with specific sentences and, or, fields within the sentences. See IEC 61993-2 Table 8 and Table 9 for examples of this type of information.

For further information contact WG6 via Convenor; M. P. Fox

Annex B
List of documents issued at the TC 80 Plenary in St John's

IEC TC80-Plen-01……

WP-01	Draft Agenda for the meeting to be held in Saint John's, Newfoundland (Canada) from 24th to 26th of September, 2001.
WP-02	Draft Attendance List for the meeting to be held in Saint John's, Newfoundland (Canada) from 24th to 26th of September, 2001.
WP-03	Report to IEC TC80 Plenary meeting 2001 – WG 1 (Radar / Radar Plotting)
WP-04	Report to TC80 Plenary meeting - WG 2a Non-SOLAS/Small Craft Radar
WP-05	Report to IEC TC80 Plenary meeting 2001 – WG 4A (GNSS)
WP-06	Report to IEC TC 80 Plenary meeting 2001 - WG 5 (General Requirements)
WP-07	Report to IEC TC80 Plenary meeting 2001 - WG 6 - Interfaces
WP-08	Interface Standards for IEC TC80 Equipment A Review of the process
WP-09	Report to IEC TC80 Plenary meeting – WG 7 (ECDIS)
WP-10	Report to IEC TC80 Plenary meting 2001 - WG 8 - GMDSS Working Group for IEC 61097-13 (Inmarsat-F satellite communications terminal)
WP-11	Report to IEC TC80 Plenary Meeting 2001 - WG8 - GMDSS Maintenance Team for IEC61097-2 406 MHz EPIRB
WP-12	Report to IEC TC80 Plenary meeting 2001 – WG 8A (U.AIS)
WP-13	Report to IEC TC80 Plenary meeting – WG 10 (INS)
WP-14	Report to IEC TC80 Plenary Meeting - WG12 (VHF DSC for small craft)
WP-15	Report to IEC TC80 Plenary meeting – MT 1 (ECDIS)
WP-16	IEC TC 80 Document Numbering from 80/230
WP-17	Current List of IEC / ISO Standards being developed by TC80 and their progress
WP-18	Publications issued by TC 80
WP-19	ISO documents relevant to IEC TC80 work

NOTE: The above-mentioned working papers (WP) are available under reference 80/317/MTG (IEC document server).

Annex C
List of Delegates and their details

Chairman (Acting)	Name: Country: e-mail: Tel: Fax:	Mr. Peter Griffiths UK pfcg@btinternet.com +44 1329 845 084 +44 1329 845 084
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